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Docee River Counting Fence 1990 Operations

I. Winther, S.K. Bachen, B.P. Spilsted and R.D. Goruk

Department of Fisheries and Oceans
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Abstract

Winther, I., S.K. Bachen, B.P. Spilsted and R.D. Goruk. 1991. Docee River Counting Fence, 1990 Operations. Can. Data Rep. Fish. Aquat. Sci. 843: iv + 14 p.

The Docee River Counting Fence (Central Coast, B.C.) was operated from July 3 to August 12 of 1990. Managers operating the Smiths Inlet sockeye fishery use the inseason sockeye escapement data provided by the fence. In 1990, 146,016 sockeye were counted through the fence. Age data from 51 sockeye as well as length and sex data from 104 sockeye were obtained from the Docee River. Age 4_2 sockeye composed 57% of the fish sampled and had a mean hypural length of 45.1 cm. Age 5_2 sockeye composed 43% of the fish sampled and had a mean hypural length of 48.8 cm. The mean hypural length between sexes of the same age group were the same for age 4_2 fish but were slightly different for the males and females of age 5_2 fish: 47.6 cm. for males vs. 49.1 cm for females. The sex ratio of all fish sampled (M:F) was approximately 1.3:1. Fence and camp maintenance and operations are described.

Résumé

Winther, I., S.K. Bachen, B.P. Spilsted and R.D. Goruk. 1991. Docee River Counting Fence, 1990 Operations. Can. Data Rep. Fish. Aquat. Sci. 843: iv + 14 p.

La barrière de dénombrement de la rivière Docee (région centrale de la côte de Colombie-Britannique) a été exploité du 3 juillet au 12 août 1990. Cette barrière a ete utilisée par les gestionnaires de la pêcherie de saumon rouge de l'inlet Smiths pour déterminer l'échappée des saumons rouges pendant la saison de pêche. En 1990, le passage de 146,016 saumons rouges a été enregistré à la barrière de dénombrement. L'âge de 51 saumons ainsi que la longueur et le sexe de 104 saumons ont été déterminés. Les individus d' âge 4_2 (longueur moyenne aux hypuraux de 45,1 cm) représentent 57 % des poissons échantillonnés. Les individus d'âge 5_2 (longueur moyenne aux hypuraux de 48,8 cm) représentent 43 % des poissons échantillonnés. Chez le groupe d'âge 4_2, il n'y a pas de variation de la longueur moyenne aux hypuraux en fonction du sexe, alors qu'une faible variation est observable chez le groupe d'âge 5_2: 47,6 cm pour les mâles contre 49,1 cm pour les femelles. Le rapport des sexes pour l'ensemble des poissons échantillonnés (M:F) est approximativement de 1,5:1. L'entretien et le fonctionnement du camp et de la barrière de dénombrement sont décrits.

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INTRODUCTION

The Docee River is located in the Central Coast District of British Columbia within Canadian Department of Fisheries and Oceans Statistical Area 10 (Fig. 1). The Docee River is less than 1 km long, draining Long Lake into Wyclees Lagoon. Wyclees Lagoon drains into Smith Inlet.

The Docee River counting fence has been in operation since 1972 and a counting tower in operation previously from 1962 to 1971 (Winther et al 1990, Winther et al 1989, Bachen et al 1988, Thomson and Goruk 1988). Sockeye escapements into Long Lake have been monitored to provide inseason estimates to Managers of the Smith Inlet sockeye fishery. The counting fence operates from late June or early July to mid August.

METHODS

Supplies were transported to the Docee River camp on June 25 and 26. The camp was operated from June 26 to August 12.

FENCE MAINTENANCE AND OPERATION

A large log jam was cleared above the counting fence. A jet boat and chainsaw as well as a block and tackle and blasting equipment were all necessary to remove the jam.

Further debris that might foul the fence was cleared from the lower lake with the jet boat before a shear boom was placed across the lake outlet.

Fence frames and counting panels were cleaned and painted before being lowered into place. Fence panels were lowered making the fence operational at 15:45 hours on July 2. It was necessary to move rocks from under the fence frames with pike poles to eliminate large holes between the frames and the river bed. Any remaining holes were plugged with sand bags.

Fence winches, cables and pulleys were serviced as necessary. Debris was cleared from the fence daily. Additional holes under the fence were plugged as they were discovered.

Fish were counted through the fence by a two man crew working one hour shifts as described by Thomson and Goruk (1988). Counts were made from July 3 to August 12.

Dead fish caught in the fence were collected and sampled. This consisted of recording hypural length and sex as well as obtaining a scale samples. Scales were collected onto scale books and sent to the Scale lab in Vancouver.

CAMP MAINTENANCE

Maintenance to the Docee cabin was minimal in 1990 as it is scheduled for replacement in 1991.

The grounds around the camp, the skidder road and the landing site at the lagoon were cleared of brush and debris.

Part of the skidder road to the camp was improved. Old decking which was used as a road surface on the hill near the camp was removed. Blasting and manual labour was used to widen this section of road and then it was redecked with cedar planks. A new bridge was built across a large hole in the road near the camp site.

RESULTS AND DISCUSSION

Daily weather conditions and river levels are presented (Table 1), as well as a graph of the morning water levels (Fig. 2).

Sockeye were counted through the Docee River fence on July 3, the first day of operation. The relatively low numbers counted at the beginning of the fence counting program would suggest few sockeye had ascended the river into Long Lake before the fence was installed. Daily counts were erratic with a maximum of 13,358 through the fence on July 26 (Fig. 3). Low counts expressed as a flattening of the cumulative count curve (Fig. 4) are likely the result of commercial fisheries. Daily and cumulative counts of sockeye and chinook appear in Table 2. Sockeye fisheries were held in Smith Inlet on July 2-3, 9-10, and 16th. Fisheries held in August were directed on Nekite River chums. Catches appear in Table 3. Fisheries appear to affect sockeye counts through the fence from 1 day after the fishery opens to 6 days after it closes. Tide height data for the Smith Inlet area is presented in Appendix 2.

A total of 146,016 sockeye were counted through the Docee River fence, with a further 2,984 sockeye added to the final fence count to account for fish arriving after August 12. Total escapement is set at 149,000. The commercial gillnet fishery caught 54,810 sockeye and the Indian food fishery did not record any landings. The total Long Lake stock was 203,818 sockeye.

Samples were collected from 104 sockeye from which 51 were aged. The sampled data is listed in Appendix 1. Length frequencies are recorded by age and sex in Table 4. Age 4_2 fish made up 57% of the sample and age 5_2 fish made up 43% of the sample. The male:female ratio was 1.3:1.[2] Differences in mean hypural lengths of age 4_2 and 5_2 sockeye were negligible. Mean hypural lengths of age 4_2 and 5_2 sockeye (males and females combined) were 45.1 cm and 48.8 cm respectively.

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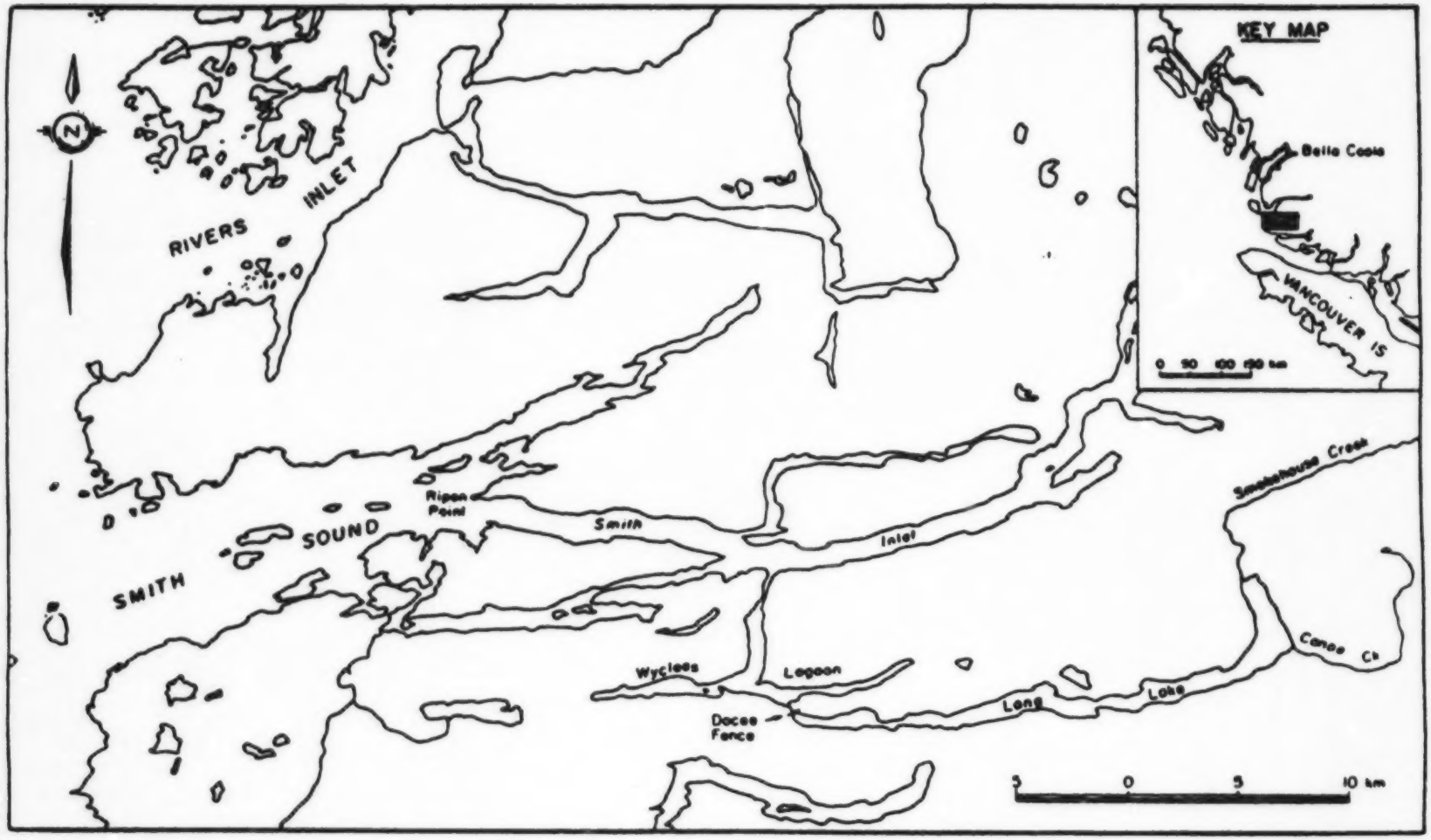

Figure 1. Location of Docee River Fence, Smith Sound.

Table 1. Docee River daily weather and river levels - 1990.

DATE	RIVER LEVEL (m) AM	RIVER LEVEL (m) PM	WEATHER AM	WEATHER PM
July 03			30% high overcast	clear
July 04			overcast	high overcast
July 05			high overcast	high overcast
July 06			low overcast	low overcast
July 07	0.60	0.61	low overcast/rain	80% overcast
July 08	0.58	0.58	high overcast	high overcast
July 09	0.55	0.56	40% overcast	clear
July 10	0.53	0.51	clear	clear
July 11	0.51	0.48	low overcast	clear
July 12	0.51	0.51	low overcast	clear
July 13	0.51	0.50	clear	clear
July 14	0.46	0.46	clear	clear
July 15	0.46	0.43	overcast	overcast
July 16	0.43	0.43	30% high overcast	clear with some clouds
July 17	0.42	0.42	clear	clear
July 18	0.36	0.33	clear	clear
July 19	0.30	0.29	10% low overcast	clear
July 20	0.28	0.27	clear	clear
July 21	0.28	0.27	clear	clear
July 22	0.25	0.24	low overcast	90% high overcast
July 23	0.25	0.25	low overcast	low overcast
July 24	0.25	0.25	low overcast, showers	low overcast, sunny breaks
July 25	0.25	0.25	low overcast	low overcast
July 26	0.25	0.25	25% high overcast	clear
July 27	0.25	0.25	clear	clear
July 28	0.22	0.19	clear	clear
July 29	0.19	0.19	high overcast	clear
July 30	0.19	0.19	overcast	clear
July 31	0.19	0.19	overcast	clear
Aug 01	0.19	0.19	clear	10% high overcast
Aug 02	0.18	0.18	overcast, rain	overcast
Aug 03	0.18	0.19	low overcast, heavy rain	low overcast
Aug 04	0.19	0.19	low overcast	clear
Aug 05	0.18	0.19	fog	clear
Aug 06	0.20	0.24	low overcast, showers	high overcast
Aug 07	0.23	0.23	high overcast	clear
Aug 08	0.22	0.20	40% low overcast	high overcast, showers
Aug 09	0.20	0.20	low overcast	clear
Aug 10	0.20	0.20	fog	clear
Aug 11	0.18	0.19	fog	high overcast
Aug 12	0.20		clear	

Figure 2. DOCEE RIVER - 1990
MORNING WATER LEVELS (m)

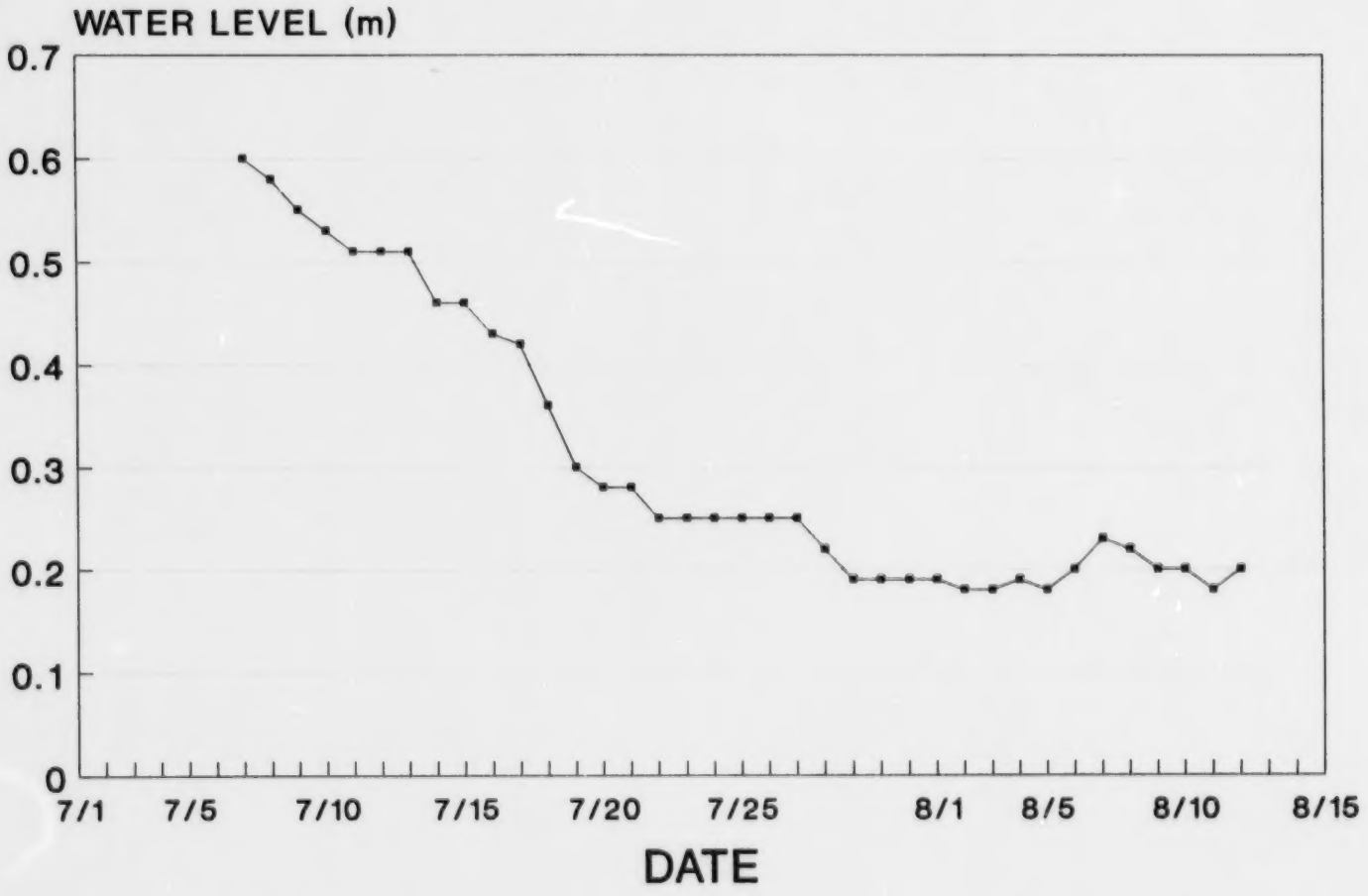

Figure 3. DOCEE RIVER - 1990
DAILY SOCKEYE COUNTS

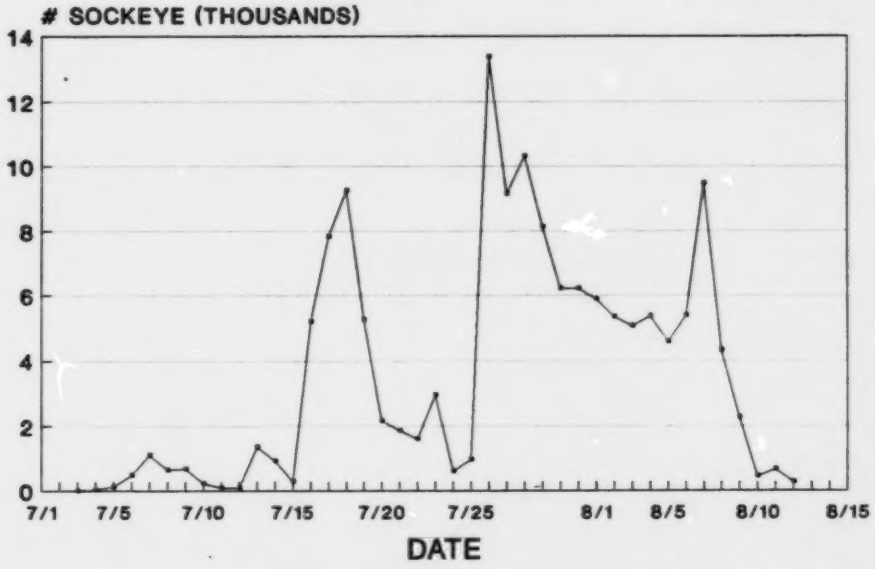

Figure 4. DOCEE RIVER - 1990
CUMULATIVE DAILY SOCKEYE COUNTS

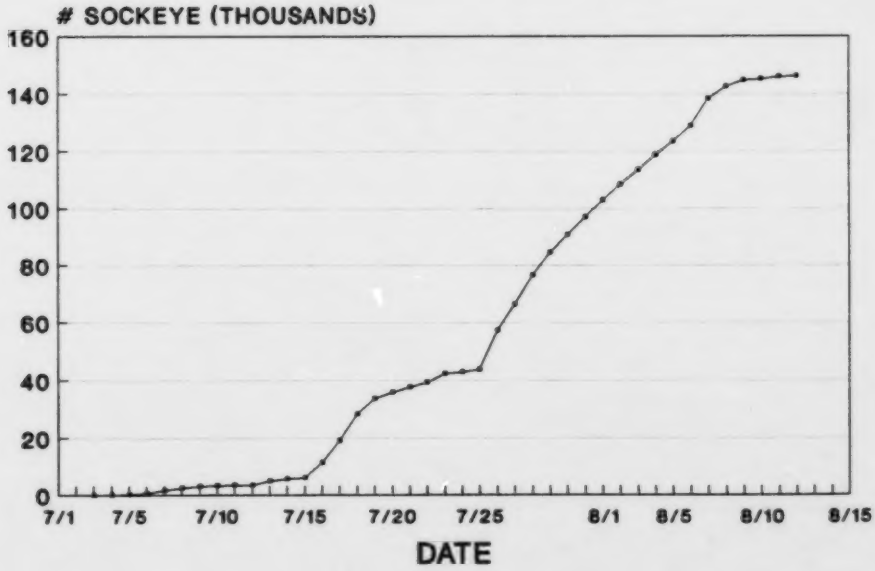

TABLE 2. 1990 Docee River daily counts.

Date		Daily Sockeye	Daily Chinook	Cumulative Sockeye	Cumulative Chinook	Comments
July	02					Fence in at 15:45.
	03	5		5		
	04	36		41		1 Trout.
	05	120		161		
	06	486		647		
	07	1106		1753		
	08	636		2389		
	09	683		3072		
	10	239		3311		
	11	96		3407		
	12	92		3499		
	13	1351		4850		
	14	921		5771		
	15	295		6066		
	16	5186		11252		
	17	7825		19077		
	18	9250		28327		
	19	5237		33564		
	20	2156		35720		
	21	1852		37572		
	22	1591		39163		
	23	2960		42123		
	24	603		42726		
	25	950		43676		
	26	13358		57034		
	27	9141		66175		
	28	10311		76486		
	29	8128		84614		
	30	6220		90834		
	31	6214	1	97048	1	
Aug	01	5881	1	102929	2	
	02	5335	1	108264	3	
	03	5056	3	113320	6	
	04	5347	8	118667	14	
	05	4582	5	123249	19	
	06	5363	18	128612	37	
	07	9459	6	138071	43	
	08	4304	3	142375	46	
	09	2264	7	144639	53	
	10	454	15	145093	68	
	11	655	18	145748	86	10 Coho.
	12	268	1	146016	87	
FINAL*				149000		

*2,984 sockeye were added to the final fence count to account for fish arriving after August 12. Total escapement = 149,000.

Table 3. Area 10 gillnet field catch data - 1990.

Date	Opr.	Sockeye	Coho	Pink	Chum	Chin.	Jack	Sthd.
02-Jul	279	2012	544	110	213	29	30	0
03-Jul	240	3770	645	369	326	76	43	5
TFW	519	5782	1189	479	539	105	73	5
TTD	519	5782	1189	479	539	105	73	5
09-Jul	241	4824	797	106	190	121	38	2
10-Jul	151	10194	275	383	341	30	3	2
TFW	392	15018	1072	489	531	151	41	4
TTD	911	20800	2261	968	1070	256	114	9
16-Jul	241	33972	882	1655	384	99	52	2
TFW	241	33972	882	1655	384	99	52	2
TTD	1152	54772	3143	2623	1454	355	166	11
23-Jul	CLOSED							
29-Jul	CLOSED							
06-Aug	1	2	13	6	11	0	0	1
07-Aug	0	0	0	0	0	0	0	0
08-Aug	10	22	5	16	14	0	0	0
09-Aug	6	14	6	13	12	9	0	0
TFW	17	38	24	35	37	9	0	1
TTD	1169	54810	3167	2658	1491	364	166	12
13-Aug	0	0	0	0	0	0	0	0
TFW	0	0	0	0	0	0	0	0
TTD	1169	54810	3167	2658	1491	364	166	12

TABLE 4. Length frequency at age of Docee River sockeye, 1990.

Hypural Length (mm)	Age 4_2		Age 5_2		Unknown	
	Male	Female	Male	Female	Male	Female
390	2	0	0	0	0	0
400	0	0	0	0	0	0
410	1	0	0	1	0	0
420	2	0	0	0	0	1
430	0	0	0	1	3	1
440	3	1	0	0	1	0
450	5	0	0	0	2	3
460	4	1	2	0	4	1
470	5	1	0	0	4	1
480	2	0	0	4	8	0
490	0	0	0	2	1	2
500	0	0	1	2	2	3
510	0	0	1	2	2	6
520	0	0	0	4	2	3
530	1	0	0	1	0	2
540	1	0	0	1	0	1
550	0	0	0	0	0	0
560	0	0	0	0	0	0
Mean Length (mm)	451	450	476	491		
Std. Dev.	32.7	14	22.1	32.9		
Sample Tot. (N)	26	3	4	18	29	24

Age Dist. (%) Age 4_2 = 57 %
Age 5_2 = 43 %

Total fish aged = 51
Total fish sexed and measured = 104

Appendix 1. 1990 Docee River Fence sockeye samples.

Book	#	Sex	HYPURAL Length (mm)	Age
49171	1	F	536	5 2
	2	M	470	
	3	F	474	5 2
	4	M	469	4 2
	5	F	516	
	6	M	450	4 2
	7	M	503	5 2
	8	F	492	5 2
	9	F	523	
	10	F	449	
	11	F	478	5 2
	12	M	452	4 2
	13	F	512	
	14	M	474	
	15	M	414	4 2
	16	M	477	
	17	M	476	4 2
	18	M	469	4 2
	19	M	461	4 2
	20	M	449	
	21	M	512	
	22	M	446	4 2
	23	F	505	
	24	M	454	
	25	M	479	
49172	1	M	478	
	2	M	468	
	3	M	476	
	4	M	466	4 2
	5	F	464	4 2
	6	F	503	
	7	M	461	
	8	M	451	
	9	F	508	
	10	M	463	4 2
	11	F	487	
	12	M	473	4 2
	13	M	480	
	14	F	449	
	15	M	443	4 2
	16	M	453	
	17	M	461	
	18	M	454	
	19	F	508	
	20	M	496	
	21	F	467	
	22	M	477	
	23	M	476	
	24	F	499	
	25	M	444	4 2

Appendix 1 Cont. 1990 Docee River Fence sockeye Samples.

Book	#	Sex	HYPURAL Length (mm)	Age
49173	1	F	509	
	2	F	417	
	3	F	531	
	4	F	524	
	5	F	520	5 2
	6	M	529	4 2
	7	M	515	
	8	F	489	
	9	F	487	5 2
	10	F	501	
	11	F	499	
	12	F	476	5 2
	13	F	474	5 2
	14	F	447	
	15	M	484	
	16	M	421	
	17	M	427	
	18	M	442	
	19	F	516	
	20	M	502	
	21	F	507	5 2
	22	M	535	4 2
	23	F	499	5 2
	24	M	452	4 2
	25	F	520	5 2
49174	1	F	456	4 2
	2	F	513	5 2
	3	F	431	4 2
	4	M	438	4 2
	5	M	456	4 2
	6	M	493	5 2
	7	M	453	5 2 2
	8	F	497	
	9	M	409	4 2
	10	M	493	
	11	F	424	
	12	M	433	
	13	M	426	
	14	M	451	4 2
	15	F	456	
49175	1	F	421	5 2
	2	F	409	5 2
	3	F	527	5 2
	4	M	456	5 2
	5	F	515	COHO 2
	6	M	388	4
	7	M	390	4 2
	8	M	438	4 2
	9	M	438	4 2 2

Appendix 1 Cont. 1990 Docee River Fence sockeye Samples.

Book	#	Sex	HYPURAL Length (mm)	Age
	10	F	508	5 2
	11	F	517	5 2
	12	M	507	
	13	F	482	5 2
	14	M	446	4 2
	15	M	420	4 2

Appendix 2. 1990 TIDE HEIGHTS (M)